

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method of watermarking a digital image, comprising the steps of:

transforming the digital image using a wavelet transform(WT);
transforming a watermark ~~using~~ using a discrete cosine transform(DCT); and
integrating the DCT-transformed watermark with the wavelet-transformed image to generate a watermark-embedded image, wherein the DCT-transformed watermark is further transformed using m-level wavelet transform before being integrated with the wavelet-transformed image.

Claim 2 (currently amended): The method of claim 1, further comprising the step of inverse wavelet transforming the wavelet transformed image.

Claim 3 (canceled)

Claim 4 (currently amended): The method of claim ~~[[3]]~~1, wherein said wavelet transform is performed using a filter bank realizing high-speed wavelet-transform.

Claim 5 (original): The method of claim 1, wherein said wavelet transform is performed using a filter bank realizing high-speed wavelet-transform.

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Claim 6 (original): The method of claim 1, wherein in obtaining the image integrated with a watermark, a scaling parameter, α , is used to adjust the spacing between the original image and the watermark.

Claim 7 (original): The method of claim 1, wherein the digital image and the watermark are black and white.

Claim 8 (currently amended): A system for watermarking a digital image comprising:

means for providing a digital image and a watermark; and
a digital processing system for transforming the digital image using wavelet transform (WT), transforming the watermark using discrete cosine transform (DCT), and integrating the DCT-transformed watermark with the wavelet -transformed image to generate a watermark- ~~embeded~~embedded image;
means for carrying out digital watermarking a black and white image using the wavelet transform (WT) and the discrete cosine transform (DCT), wherein the watermark is black and white; and
means for providing an m-level wavelet transform (WT) before the DCT-transformed watermark it is integrated wavelet transformed image.

Claim 9 (canceled)

Claim 10 (canceled)

Claim 11 (currently amended): The system of claim ~~[[9]]~~8, wherein the system includes further comprising filter-banks for providing high-speed wavelet-transform and for providing inverse wavelet transform.

Claim 12 (currently amended): A method of digital watermarking a color image comprising the steps of;

discrete cosine transform (DCT) transforming a watermark,
wavelet transform (WT) transforming a color image, and
integrating the DCT-transformed watermark with wavelet
transform (WT) color image, wherein the DCT-transformed watermark $WC(y)$ is
further transformed using m-level wavelet transform before being integrated with
the wavelet-transformed color image $DW(x)$.

Claim 13 (currently amended): A method of claim 12, further comprising
the steps of:

converting the color image in the RGB mode, $RGB(x)$, into $Y(x)$,
 $I(x)$, and $Q(x)$ in the YIQ mode using a conversion matrix $[[.]]$

Claim 14 (currently amended): A method of claim 13, further comprising
the steps of:

transforming $Y(x)$ of the converted image using wavelet transform;
transforming a watermark, $W(y)$, using discrete cosine transform
(DCT);

integrating the DCT-transformed watermark, $WC(y)$, with the
wavelet-transformed color image, $DW(x)$;

generating Y-values of the integrated image, $Y(x)'$, using inverse
wavelet transform; and

generating a watermark-embedded image in the RGB mode,
 $RGB(x)'$, by inverse transformation of $Y(x)'$, $I(x)'$, and $Q(x)'$.

Claim 15 (canceled)

Claim 16 (original): The method of claim 12, wherein said wavelet transform is performed using filter-banks realizing high-speed wavelet-transform.

Claim 17 (canceled)

Claim 18 (canceled)

Claim 19 (canceled)

Claim 20 (currently amended): A system of digital watermarking a color image, comprising:

- means for converting the color image in the RGB mode, $RGB(x)$, into $Y(x)$, $I(x)$, and $Q(x)$ in the YIQ mode using a conversion matrix;
- means for transforming $Y(x)$ of the converted image using wavelet transform;
- means for transforming a watermark, $W(y)$, using DCT;
- means for further transforming the DCT-transformed watermark $WC(y)[D]$ using m-level wavelet transform;
- means for integrating the DCT-transformed watermark, $WC(y)$, with the wavelet-transformed color image, $DW(x)$;
- means for generating Y-values of the integrated image, $Y(x)'$, using inverse wavelet transform; and
- means for generating a watermark-embedded image in the RGB mode, $RGB(x)'$, by inverse transformation of $Y(x)'$, $I(x)'$, and $Q(x)'$.